Title:	The changing shape of a liquid drop in an electric field
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Abstract:	An approximate extension of the slender body theory was used to determine the static shape of a conically ended dielectric fluid drop in an electric field. Using induced surface charge density, hydrostatic pressure and the surface tension of the liquid with interfacial tension stresses and Maxwell electric stresses, a governing equation was obtained for slender geometries for the equilibrium configuration and numerically solved for 3D. For an applied electric field, the electric energy on a spherical drop can be maximized in a weak dielectric by increasing the applied electric field. The minimum dielectric constant ratio needed to produce a conical end is 14.5 corresponding to a cone angle 31.25.There is a sharp increment of the aspect ratio after reaching the threshold value of the applied field strength and the deformation of the fluid drop increases with the increase in dielectric constant of the fluid drop. For a particular dielectric constant ratio, the threshold electric field producing conical interface increases with the increased surface tension of the liquid. The threshold electric field for a water drop is 1.0854×104 units and the corresponding aspect ratio is 15. For the minimum dielectric ratio the cone angle of the drop decreases with applied field making the drop more stable at higher fields.